REMARKS

Claims 1 to 16 are under examination and claims 17 to 20 are withdrawn. Claim 21 has been added to bring the total to 17 claims under prosecution.

1. Applicant elects claims 1 to 16 to prosecute and claims 17 to 20 are withdrawn without prejudice.

2. Claims 1 to 9, 14 to 16, are rejected under 35 U.S.C. 102(e) as being unpatentable over Anthon et al.,US Patent 6,411,762 ('762) or Anthon (WO 99/30391), for the reasons noted on pages 2 and 3, paragraphs 3 and 4.

It is basic patent law that in order to anticipate a claim, the reference must describe all elements (limitations) of the claims and that a prior art reference does not anticipate a claim unless its disclosure is in such full, clear, and exact terms as to enable any person skilled in the art to which the invention relates to practice it. A mere suggestion in the reference is not enough. Monsanto Co. v. Dawson Chemical Co., 165 USPQ 560 (1970) and In re Spada, 15 USPQ2d 1655 (Fed. Cir. 1990). MPEP 2131.

Further, the Examiner has not presented a factual basis or objective technical evidence to support a theory of inherency as to the missing element(s). MPEP 2131.01 To establish inherency, it is not enough that "a certain result or characteristic may occur or be present" in the reference, instead it is incumbent upon the Examiner to provide objective evidence and/or cogent technical reasoning which would show that the characteristics of the device of the present invention are inherent in and necessarily flow from the teaching of the cited art. See MPEP 2112.

The Applicant believes that the Examiner is in error in this rejection in that the Anthon et al. reference is solely directed to a silica fiber structure without a polymer protective coating. This reference does not describe all the elements of the claims and certainly does not enable a person skilled in the art to practice the claimed invention. The features shown and discussed in these references are not relevant to the present invention as related below:

It is therefore asserted that these cited reference(s) clearly does not anticipate the invention for the reasons noted hereinabove. The features claimed in the reference do not function as in the present claims. Further this reference does not anticipate Claims 1 to 9, 14 and 16, since its disclosure is not in such full, clear, and exact terms as to enable any person skilled in the art to which the invention relates to practice it.

As to the present invention, in the specification, page 6, lines 20 to 25, "However, the evanescent field ... necessarily leaks into the outer coating(s), which can be destroyed during transmission of higher powers. The present invention provides a fiber with an additional glass layer between the pump core and coating, thus restricting most of the evanescent field to glass and relieving the danger of damaging the coating by high power transmission." [underlining added for emphasis] Further, the high power of concern is noted on the next page of the present invention, page 7, lines 2 to 3, "for output powers greater than 50 watts, a significant heating of the fiber was observed." A key inventive feature is noted thereafter that "the addition of a new glass layer between the pure silica pump core ... and the silicone rubber outer coating ..." Page 7, lines 5 to 6. These statements clearly define the operational characteristics of the present fiber laser/fiber amplifier and specifically include a structure, an additional layer, that reduces damage caused by an evanescent field impacting on the protective coating, in the present invention, in particular, claim 9, notes that the protective coating is a polymer.

As to the particular features of the claimed invention, the following details the fiber structure as well as compositions and other optical characteristics (reference to present application):

A. As to the first embodiment, see page 9, last paragraph, also Figure 2:

The active core 204 of the present invention, Figure 2, is noted as made of rare earth doped $Si0_2$;

The pump core 206, the second layer in Figure 2, is preferably made from pure silica, Ge-doped SiO_2, or F-doped SiO_2; (in this Figure 2 embodiment, pump core 206 is identified as the "inner cladding");

A "silica cladding" is called silica cladding 208 having an index of refraction less than the underlying cladding. Also, "The cladding layer that surrounds this inner structure (the "inner

cladding") is preferably made either from pure silica, F-doped silica or silica doped with any other ... its refractive index is lower than the pump core's refractive index." Page 8, last two lines.

The third layer is a polymer coating 202. This is the outer coating of the present invention.

B. As to another embodiment of the present invention , see page 10, first three paragraphs as to the following description of the Figure 3 embodiment:

The active core 304 of the present invention, Figure 3, is noted as made of rare earth doped SiO_2. This being the same as in the first embodiment.

The pump core 306, the second layer in Figure 3, is preferably made from pure silica, Ge-doped SiO_2, or F-doped SiO_2; (in Figure 2 embodiment, pump core 206 is identified as the "inner cladding"). This also being the same as in the first embodiment.

The third layer, the "inner cladding," is silica cladding 308 (this layer may be pure silica or preferably fluorine-doped silica);

An "outer cladding layer" is called cladding 310 (this layer is made of fluorine-doped silica);

The fourth layer is a polymer coating 302. This is the protective coating of the first embodiment.

A further feature of the present invention is disclosed as "D-shaped pump core." See page 10, lines 23 to page 11, line 15, of the present application. This feature is noted in claims 11 and 13 and has a purpose of increasing the yield of light absorption with the active core of rare earth dopants. See page 11, lines 9 to 14. See Paragraph 3 below in regard to arguments why the "D-shaped pump core" is different than the cited references.

As to the rejection noted in Paragraph 2 above, Anthon et al., U.S. Patent 6,411,762, disclose an optical fiber 10. See Figure 1 and see Col. 4, lines 55 to 65, and Col. 5, lines 1 to 30. A summary of their structure is noted as follows:

A core 10 (YbEr doped silica with doping material like phosphorous, cerium, etc.);

First cladding layer 14, also called the "pedestial," may include one or more doped layers such as layers 20 and 22, may be germanium-doped silica (may function as a stripper or an absorber). Layer 22 may be a cobalt containing material. It also notes that cladding 14 may be eliminated in certain applications;

Second cladding layer 16 (from pure or modified silica material); and

Third cladding layer 18 (made from a fluorine doped silica material and is also the outer coating).

As to the reference of Anthon et al., WO 99/30391, Figure 1 discloses the first cladding layer 14 being the same as the Anthon et al. U.S. Patent 6,411,762. The layers 20 and 22 in '762 are not the same layers as shown in the reference of '391 due to mislabeling, but the disclosure is essentially the same for the purpose of this rejection.

The above discussion as to the presently claimed invention is equally applicable to the reference of WO 99/30391 ('391) being essentially the same as "762.

The closest structure of the present invention (See Paragraph 1A above) to Anthon et al., either reference, is the first embodiment of the present invention where the pump core 206 corresponds to layer 14 of Anthon et al. since one of the suggested compositions is the same. Second cladding layer 16 of Anthon et al. is noted as composed of pure or modified silica material but the outer cladding layer 208 of Figure 1 of the present invention is noted a composed of a fluorine-doped silica.

The applicant has added new claim 21 where additional cladding layers are included between the pump core and the inner cladding layer being the protective layer. Support for this claim 21 is shown in Figure 3 as well as in the specification, page 10, lines 1 to 23. Thus, the protective layer would be adjacent to the cladding layer for preventing damage to the protective layer as the laser is operated in the high power mode.

Therefore, Anthon et al. does not show a fluorine doped material adjacent to the pump core, layer 14, or the corresponding layer 206 in the present invention. Anthon et al. does not show that the modified silica material includes fluorine doping. Anthon's third cladding layer 18 is noted as composed of fluorine-doped silica material but in the above embodiment of the present invention, Figure 2, the third layer is noted as a polymer coating 302.

Anthon et al. notes in Col. 2, line 49 to 51, "Polymer-clad fibers are less stable thermally and mechanically than silica fibers, and they can be easily damaged by the pump radiation." In the present invention, the outer coating is noted as a protective coating and this is claimed as a polymer in claims 9 and 14. Anthon et al. noted that in a high power amplifier, "it is often desirable to maximize the core size to reduce the possibility of optical damage." Col. 4, lines 20 to 24. Therefore, Anthon et al. teach away from any additional layers but that an increased diameter of the fiber amplifier is desired to reduce damage during high power operations. The highest power

mentioned by Anthon et al. is a 10 W fiber-coupled diode, Col. 15, lines 38 to 45, which is well below that of the power range mentioned in the present disclosure of at least 50 W.

It is therefore seen from the above that the structure of Anthon et al. is not comparable to that of the present invention and further the present invention is concerned about having a power output of at least 50 watts. Anthon's et al. claimed invention is directed at the structures of Figures 3B to 4D and teaches away from the structure shown in Figure 1 of the present specification. As noted by Anthon et al., Col. 10, lines 40 to 47, the region 40 corresponds to the second cladding layer 16 and region 42 to cladding layer 18 of Figure 1 of the specification. Therefore the areas of irregularities as shown by Anthon et al. being on the outer surface of second cladding layer 16 do not occur on the pump core 406 or 506 outer surface as shown in the present invention (see Figures 4 and 5 of the application).

3. Claims 10 to 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anthon (WO 99/30391) in view of Po (US Patent 6,516,124) for the reasons noted on page 4, paragraphs 5 and 6.

A determination as to whether a valid rejection has been made begins with ascertaining that the PTO policy regarding the guidelines laid down by the Supreme Court in Graham v. John Deere, 148 USPQ 459 (Sup. Ct. 1966) has been carried out. The PTO policy is simply that the patent Examiners carry the responsibility of making sure that the standard of patentability enunciated in this decision is applied in each case.

The proper test of obviousness is found in the four Graham inquiries: These inquires are determining the scope and content of the prior art, ascertaining the differences between the prior art and the claims at issue, resolving the level of ordinary skill in the pertinent art, and considering objective evidence present in the application indicating obviousness or non-obviousness. The issue to be resolved is whether these inquires have been correctly applied, considered and resolved.

It is further noted that the obviousness rejection should be directed at the claimed invention of the patent application in light of the teachings of the references, not that the claimed invention could be used on the cited references.

It is therefore asserted that the rejection of Claims 10 to 13 is in error. The claimed invention is not obvious in light of the prior art cited by the Examiner. Applicant respectfully submits that the present invention is not made obvious by the combination of references of Anthon et al. and Po because the combination has failed to satisfy the "every element" requirement. Moreover, the present invention is patentable over the cited references because the combination provided no suggestion or motivation to modify the reference teachings so as to produce the present invention.

The teaching of Anthon et al. is noted above. The differences between this reference and the presently claimed invention has been discussed and the differences noted above. The present invention is concerned with high power laser output. In the present invention, Figures 4 and 5 show a single flat section on the pump core 406 (506). Anthon et al. disclose a plurality of irregularities and protrusions, not a single flat section. Further as noted above, the protrusions occur on the cladding layer 16 which is not the pump core as shown in the present invention.

The Po patent, U.S. Patent 6,516,124 discloses a fiber 150 having a first cladding 210 having two flat sections. The first cladding is noted as made from silica materials such as fused silica materials. Col. 3, lines 60 to 61. Cladding 220 is noted as made of polymeric materials. Col. 4, lines 48 to 50. There is no teaching in Po why only one flat section would be better than two flat sections. As noted in Po, Col. 1, line 24, "first cladding has at least two substantially flat sides, ..." See also Claim 1 noting "at least two substantially flat sides..." Anthon et al. use multiple protrusions, not just two. It is therefore seen that these references teach that more and not less protrusions are desirable.

It is further asserted that the claims directed at the non-circular cross section of either the pump core or the inner cladding layer, claims 10 and 12, respectively, are dependent off of a claim which is believed to be patentable over the cited art and has further been amended to distinguish over the cited art. The Anthon et al. patents are directed at a protective coating of silica material. The present invention claims that the protective coating is a polymer (claims 1 plus 9).

Therefore, these references either singly or in combination do not teach the presently claimed invention of the pump core having a D-shaped section but that more protrusions are needed.

With these remarks it is believed that the requirements of 35 USC, 37 CFR and the MPEP have been answered and the disclosure and claims are now in condition for examination as one whole invention. Consideration is respectfully requested. An early and favorable response is earnestly solicited. Thank you.

Respectfully submitted,

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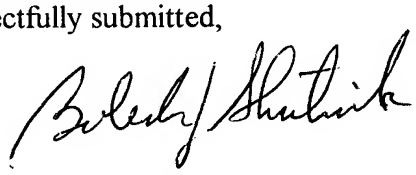

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